

LOGGERHEADLINES

2021

A publication of the SCDNR Marine Turtle
Conservation Program





The turtles and the volunteers finally caught a break in 2021, with no major storms during the nesting and hatching season. This produced the highest emergence success South Carolina has had in eight years.

As I look towards retirement, I want to reflect on the first volunteer-run nest protection projects. These leaders were already on their beaches prior to 1981 doing the important work of collecting data on the numerous strandings that were occurring. I missed the first four years of these efforts working on cattle farms before I came to my senses.

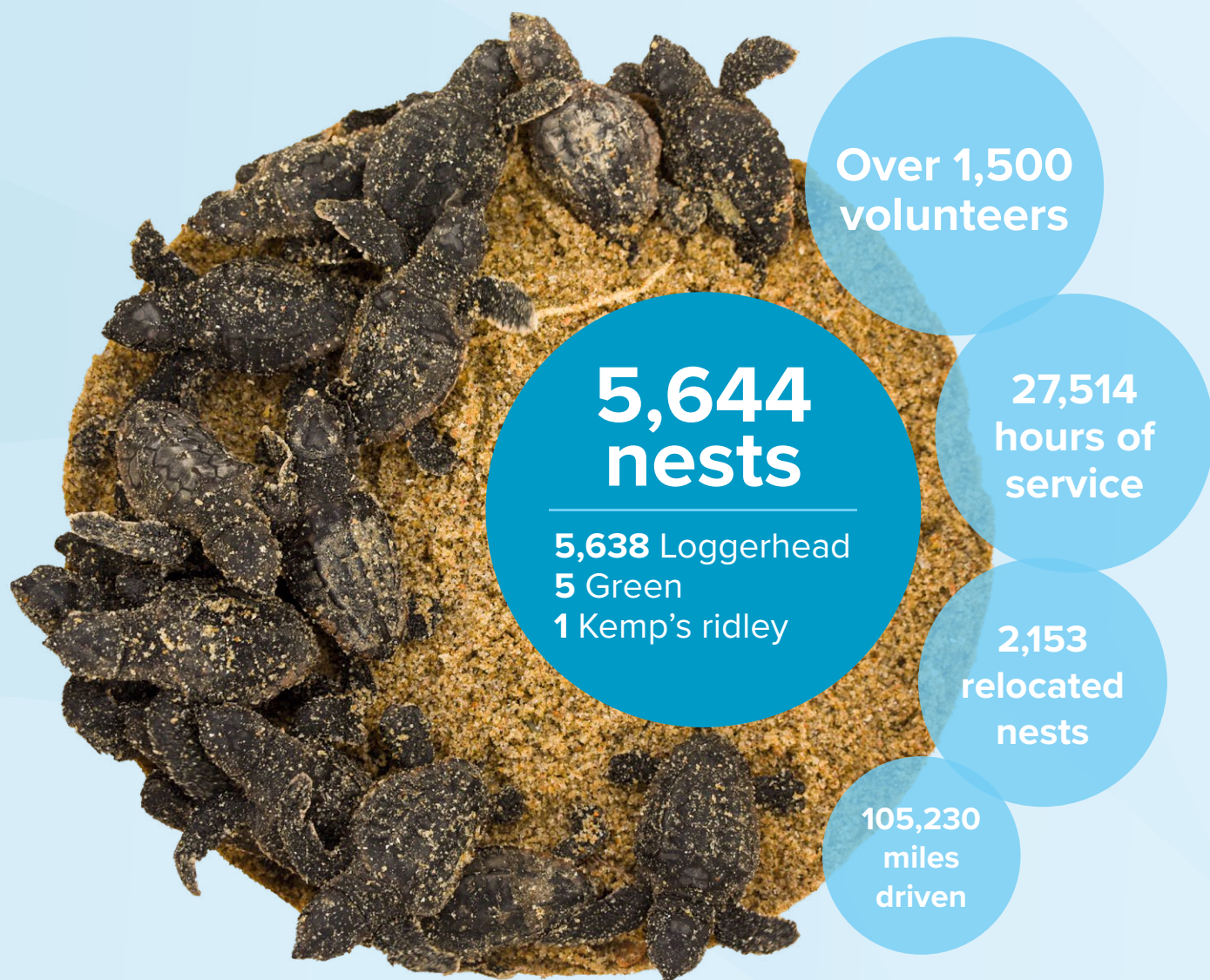
These first pioneer projects' contributions of trial-and-error nest protection techniques helped Sally Murphy, the state's first sea turtle coordinator, write the first nest protection management guidelines for volunteers. She presented these management guidelines at the 1983 Western Atlantic Turtle Symposium. These guidelines were the foundation of the many variations that followed and are used by tens of thousands of volunteers in the Southeastern United States. For perspective, those first guidelines were two and a half pages long. The growth of volunteer projects and their efforts over the years have assisted in the recovery of sea turtles.

As a colleague, helper and onlooker for decades, I was and continually am awed by the devotion and professionalism of the MTCP volunteers.

— Charlotte Hope
*Wildlife Biologist, Marine
Turtle Conservation Program,
SCDNR*



2021 IN REVIEW





First nest

May 5, 2021
Seabrook Island
Loggerhead

First emergence

July 7, 2021
Edisto Beach St Park
Loggerhead

Last nest

September 3, 2021
Huntington Beach St Park
Green

Last emergence

October 27, 2021
Seabrook Island
Loggerhead

2021 Sea Turtle Nest Count by Beach

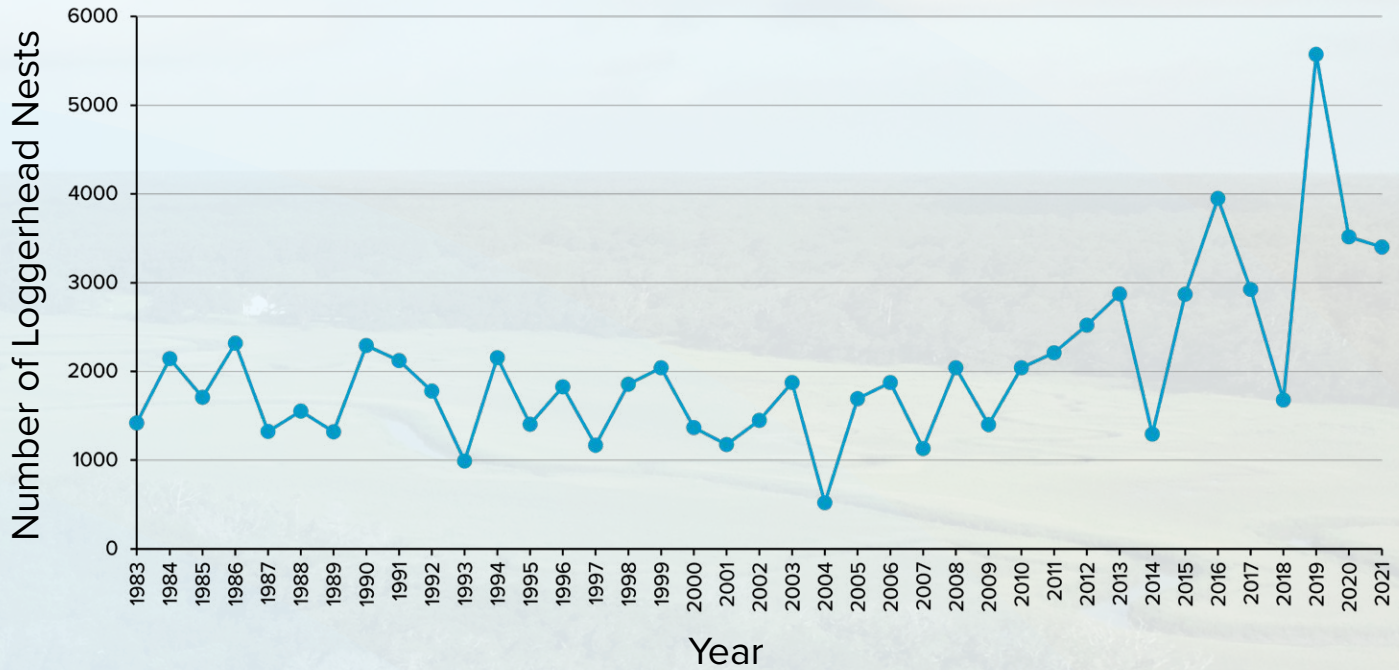
Waties Island	12	Sand Island	74	Kiawah Island	339	Hunting Island St Park	130
N. Myrtle Beach	9	South Island	382	Sandy Point - Kiawah	58*	Fripp Island	80
Briarcliffe Acres	6	Cedar Island	80*	Seabrook Island	76	Pritchards Island	63*
Myrtle Beach	17*	Murphy Island	41*	Deveaux Bank	10*	Little Capers Island	82*
Myrtle Beach St Park	3	Cape Island	1,042	Botany Bay Island	190	St. Phillips Island	5*
Long Bay Estates	2	Lighthouse Island	1,078	Botany Bay Plantation	182	Lands End	4*
Surfside Beach	2	Racoon Key	18*	Interlude	12*	Bay Point Island	49*
Garden City	10	Bulls Island	99	Edingsville Beach	44	Hilton Head Island	283
Huntington Beach St Park	21	Capers Island	10*	Edisto Beach St Park	206	Parris Island	8*
Litchfield Beaches	20	Deweese Island	6	Edisto Beach	117	Daufuskie Island	80
Pawleys Island	35	Isle of Palms	36	Pine Island	8*	Turtle Island	1*
Debordieu	47	Sullivans Island	13	Otter Island	113*	TOTAL	5,644
Hobcaw	39	Morris Island	13*	Coffin Point	23		
North Island	201*	Folly Beach	100	Harbor Island	65		

*Number represents a minimum nest count because these beaches are not surveyed every day.



ON THE UP

Loggerhead Nest Counts on South Carolina Index Beaches



Sea turtle stewardship requires commitment to long-term monitoring goals. The South Carolina index beach survey is a subset of our total statewide nest survey (representing roughly 46% of nesting). This survey consists of projects that have conducted standardized data collection of loggerhead nests using ground surveys since 1982, and it's used to examine nesting trends over time. Loggerhead nest counts from these six beach projects (South Island, Cape Island, Lighthouse Island, Edisto Beach State Park, Edisto Beach, and Fripp Island) totaled a minimum of 2,904 for the 2021 season. The up and down of nest count numbers illustrates the cyclical reproductive pattern of sea turtle nesting, as not all females nest each summer. The upward trend of the nest counts in the past decade is encouraging, suggesting the reversal of the long-term decline of years past.



DNA

5,227
DNA samples
in 2021

The SCDNR Marine Turtle Conservation Program participates in a collaborative multi-state research project with the Georgia Department of Natural Resources, North Carolina Wildlife Resources Commission, and researchers at the University of Georgia. This past year, 2021, marked the twelfth consecutive year for this genetics project. Such research continues to reveal new and interesting insights into loggerhead nesting patterns and prompt new questions. In 2021, we saw both a significant percentage of females new to the project and many returning nesters. Several of these females are well known to their “favorite” beaches, and their periodic return is a highlight for long-term nest survey volunteers. **Learn more about the genetics project at: bit.ly/seaturtleDNA**



Terrapin Genetics



Genetics research on diamondback terrapins began in June 2021, with the first samples collected from Raccoon Key. In July, word was sent out to the Marine Turtle Conservation Program

volunteer network to make our permit holders aware of the project and give them the option to participate. The project is conducted similarly to the sea turtle genetics project that has been in place since 2010. Samples are collected from depredated or hatched eggshells or from deceased juveniles or adults. These samples will be used to analyze a new genetic marker to better understand how many distinct nesting populations, or hatching sites, can be found in Georgia and South Carolina and just how widely each of these groups will disperse into foraging areas.

This new study, headed by Dr. Brian Shamblin, piggy backs on a previous genetic study conducted in South Carolina between the ACE Basin and Winyah Bay, in which there was no structure found amongst foraging groups. However, long-term mark-recapture studies and telemetry research have suggested that these turtles have high site fidelity and don't move great distances. This makes the local populations of this species, already considered a species of concern in South Carolina, especially vulnerable to threats such as derelict fishing gear (i.e. crab pots), loss of habitat due to coastal construction and road mortality.

Dedicated volunteers and staff from 12 different projects along the South Carolina coast collected a total of 109 samples for analysis. These samples will hopefully provide further insight into the life of this high-priority yet elusive species so that we may better advocate for their conservation and protection in the future.



TAGGING

The Marine Turtle Conservation Program tagged 26 turtles in 2021 prior to release from rehabilitation at the South Carolina Aquarium. A juvenile green turtle that has served as an educational ambassador at Riverbanks Zoo for two years was also tagged and released. Tagging allows biologists to track a turtle's progress should it be encountered again. The statuses of formerly tagged turtles encountered through nesting programs or stranding response during 2021 are listed below:

Tagged Turtles	Original Tag Location	Recapture Info	Time and Distance from Tagging Location
Loggerhead - Nesting	Wassaw Island, GA on 5/30/2011	**Alive on 5/26/2021 nesting on Kiawah Island, SC	10 years & ~70 miles
Loggerhead - Nesting	Kill Devil Hills, NC on 10/6/2017	Alive on 5/31/2021 nesting on South Island, SC	3 years, 7 months & ~325 miles
Loggerhead - Nesting	Wassaw Island, GA on 6/22/2017	Alive on 7/18/2021 nesting on Hilton Head Island, SC	4 years, 1 months & ~30 miles
Loggerhead - Stranding	Charleston Harbor Ship Channel on 5/22/2017	Dead on 5/6/2021 in Charleston Harbor Ship Channel	3 years, 11 months & ~0.1 miles
Loggerhead - Stranding	Core Sound, NC on 5/21/2007	Dead on 5/30/2021 on Isle of Palms, SC	14 years & ~260 miles
Kemp's ridley - Stranding	#Surf City, NC on 6/6/2018	Dead 7/1/2021 on Folly Beach, SC	3 years, 1 month & ~195 miles

**Turtle previously spotted on Kiawah Island in 2017, 2019. #Originally a cold stun stranding from Truro, Cape Cod, Massachusetts on 11/25/2017.

STRANDING RESPONSE

160
stranded
turtles in
2021

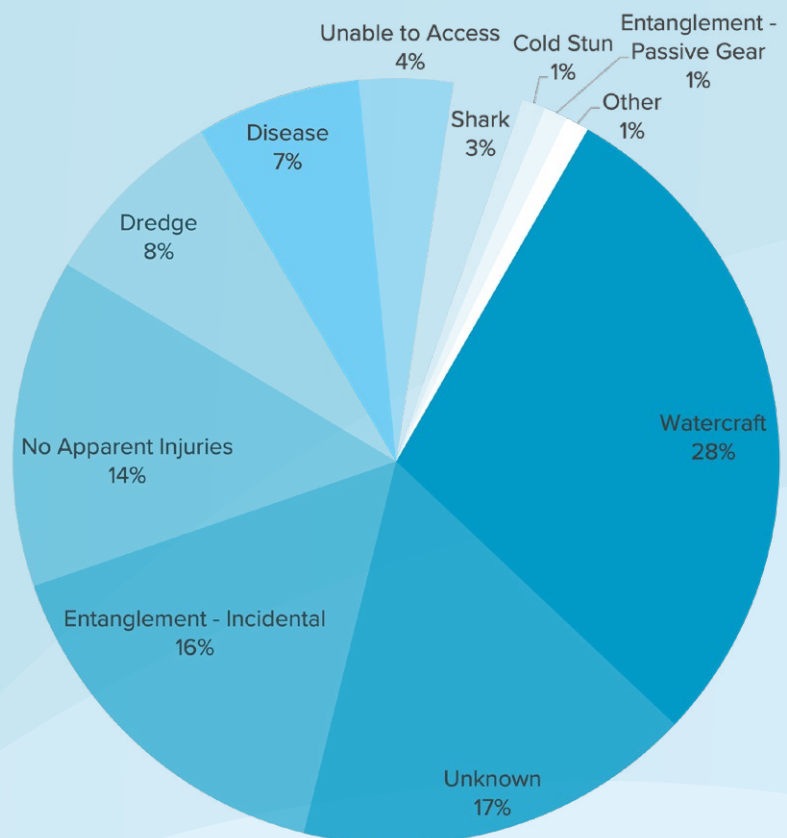


One hundred sixty sick, injured, or dead sea turtles washed ashore in South Carolina during 2021. The species composition of stranded turtles included 70 loggerheads, 59 Kemp's ridley, 30 greens and one turtle of unidentified species.

Forty-four stranded alive (25 Kemp's ridley, 10 loggerheads, 9 greens). The probable cause of the live-stranded turtles included: 25 incidental entanglements, 7 diseased, 4 boat strikes, 2 shark attacks, 2 lethargic/unable to dive, 1 cold stun, 1 dredge "take" and 1 disoriented nesting female. One live stranding was observed but unable to be recovered.

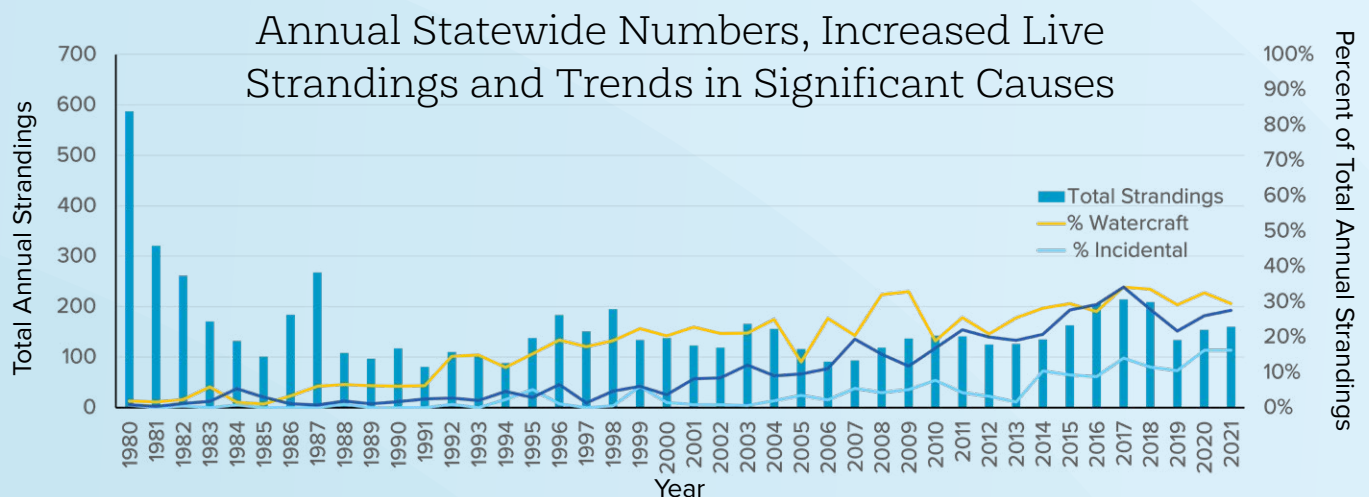
Thirty-two live stranded turtles were admitted to the South Carolina Aquarium Sea Turtle Care Center™ to receive medical care. Fifteen of these were successfully rehabilitated, tagged and released; 10 remain under rehabilitation; and 7 turtles died. Nine additional turtles were released on-site after stranding; two turtles died on-site after stranding alive, and eight other turtles were released in 2021 that stranded in 2020 (7) and 2019 (1) respectively. The South Carolina Aquarium Sea Turtle Care Center also received eight cold-stunned Kemp's ridleys from the New England Aquarium in Massachusetts for further rehabilitation.

Cause of Sea Turtle Strandings in 2021

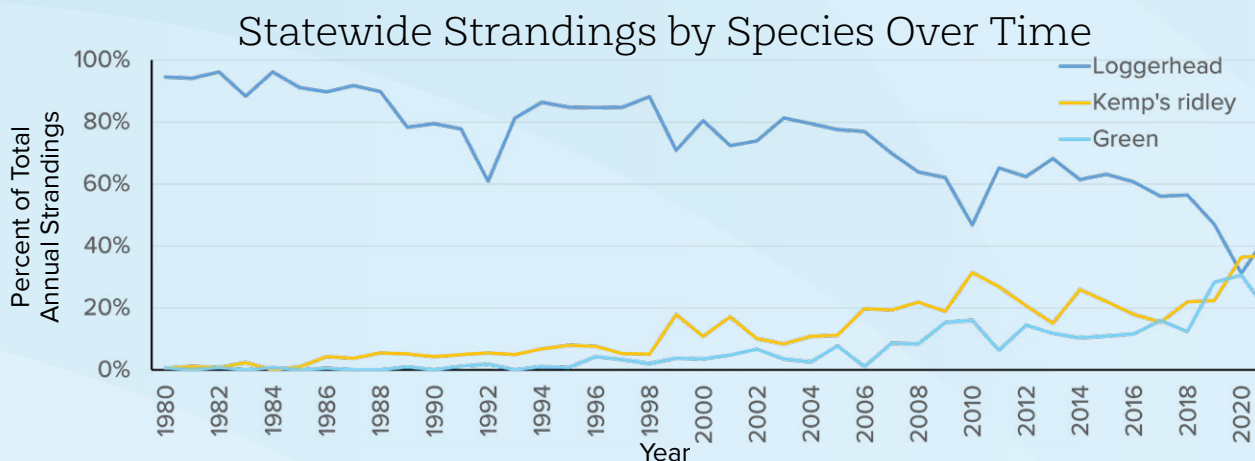


Long Term Stranding Trends

The Sea Turtle Stranding and Salvage Network (STSSN) is a regional network formally established in 1980 by National Marine Fisheries Service, with SCDNR coordinating the South Carolina portion. Prior to its establishment, roughly half the South Carolina coast was monitored for sea turtles that washed ashore. Our network has grown from a few individuals to a network of 75+ volunteers who provide an invaluable service to our state, monitoring our beaches for sea turtles that are dead or compromised. We remain ever-appreciative of and indebted to our network members, whose passion and drive fueled the growth of the network through the years. Volunteers respond to approximately 75% of both live and dead stranding events and slightly less than 80% of live rescues annually in South Carolina. Long-term stranding events in South Carolina certainly haven't diminished, as threats to their survival are still present, but they now occur at a relatively consistent magnitude with occasional year-to-year peaks and declines since those early days of the 1980s.



Recent years numbers forecast a trend toward increased response to live sea turtles in need of help. This trend reflects changing aspects of coastal life in South Carolina: 1) more sea turtles (and different species assemblages) present in our waters than in the past; 2) more “eyes on the water,” an increasing coastal population and use of coastal habitats for recreation; and 3) more people understanding and reporting their interactions with live turtles and their willingness to assist us in getting these turtles additional care when necessary. We will continue to respond to and document sea turtles found dead or alive to determine causes of mortality in order to better inform conservation management and recovery.



RESEARCH AT SEA

Contributed by Mike Arendt of the SCDNR In-Water Sea Turtle Research Project

For the SCDNR In-Water Sea Turtle Research group, 2021 field season coastal surveys were restricted to day trips aboard research vessels based in Charleston, SC (*R/V Lady Lisa*) and Brunswick, GA (*R/V Georgia Bulldog*) vs. the planned regional survey. In total, 93 trawling events were completed during 13 sea days, which captured a total of 11 loggerhead and 15 Kemp's ridley sea turtles. Although data from the 2021 season will not be used for temporal trends, demographic and health data still provided analytical value.

The 2021 field season also marks the twenty-first and final coastal trawl season associated with the long-term funding provided by the NMFS SERO (\$5.6M since 2000). Rather than see this change as a loss, we offer the following encouraging prognosis. First, a silver lining of the pandemic was the opportunity to restructure funding to support greater analysis of existing data, particularly in the context of theoretical modeling of 'expected' conditions. Arendt et al. (2021) reported a novel analysis that not only suggests cautious optimism that the southeastern United States isn't running out of male loggerhead sea turtles, but also that under decadal climate oscillation (which has been associated with nest counts in Florida), twice-a-century peak synchrony of adult males and females should occur. We are now in that period of synchrony, a needed reason to rejoice! Several other exciting and breakthrough analyses are also underway this winter, so stay tuned for further publications later in 2022 or early 2023.

Second, we will continue to conduct in-water sea turtle research under a new five-year award from NMFS SERO; however, our focus will shift from coastal trawling to collaborative research with (a) the estuarine trammel netting survey managed by SCDNR and (b) telemetry research with regional rehabilitation facilities. Greatest emphasis will be on green sea turtles, which comprised less than 1% of all sea turtles captured in the coastal survey after 21 years of operation. Already, the partnership with both surveys is yielding novel data on seasonal distribution of juvenile green sea turtles in the South Atlantic Bight that will be included in an upcoming habitat assessment by NMFS, and new collaborative telemetry tracks will be available online.

21 seasons in numbers

- Nearly 8,300 coastal trawling events
- 2,956 individual sea turtles captured, 78 (3%) of which were recaptured during trawl surveys and another 74 that were previously tagged or later seen by others
- 135 satellite tags deployed
- 97 acoustic transmitters deployed
- 12 graduate theses/dissertations supported through data provision
- 42 peer-reviewed scientific publications

Learn more about the ongoing collaborative project studying the distribution of green sea turtles in the South Atlantic Bight at bit.ly/trackinggreens.

The End of an Era

The *R/V Lady Lisa*, home to SCDNR's in-water research for decades, as well as a number of other long-term research projects, is retiring after over forty years of service. In 2021, the S.C. Legislature appropriated funds to replace the aging former shrimp trawler.

In-Water Turtle Research Principal Investigators

2000-2002 - J. David Whitaker

2002-2005 - Phil Maier

2005-2007 - Dr. Al Segars

2007-2022 - Mike Arendt



The final loggerhead (CC3299)
of the 21-season project!



Crew aboard the *R/V Georgia Bulldog* processing a Kemp's ridley.



Project members aboard the
R/V Lady Lisa in the early 2000s.

TEAM UPDATES

Cape Romain National Wildlife Refuge

Cape Romain National Wildlife Refuge continues to be the densest nesting habitat north of Florida; this season alone the Refuge documented 2,237 nests and 3,313 false crawls. A huge thank you to and recognition of the U.S. Fish and Wildlife Service staff and volunteers that spend hours boating to and from the refuge, patrolling, documenting and protecting nests each day. This past year, Cape Island received an exciting visit from a Kemp's ridley female who laid one nest in May 2021. This was the only Kemp's ridley nest recorded for the season and only the seventh Kemp's ridley nest EVER recorded for the state.

Daufuskie Island

This season the Daufuskie team made strides in protecting their nests after many years of struggling with armadillo predation with the implementation of the "Dig Defense" system. This metal barrier is placed in a triangle around the nest and dug into the sand and used in combination with surface protective measures, stopping the armadillos in their tracks. In the 2020 season, 20 of 66 nests were lost to armadillos, with other partial losses totaling a minimum of 854 eggs lost. However, in 2021, only 2 partial losses were recorded out of the 80 nests laid, totaling only 57 eggs lost.



Edisto Town

In 2021, Edisto Town Beach, in partnership with Dominion Energy, operated under new amber-colored turtle-friendly lights along the beach, which were funded by a U.S Fish and Wildlife Service Grant. These lights helped dramatically reduce the number of disorientation and misorientation events. The Edisto Beach Loggerhead Turtle Project also implemented used 'Beach Toy Borrow Bins' at various access points this year for beachgoers to re-use abandoned beach toys found by EBLTP while on survey.



Edingsville

The Marine Turtle Conservation Program would like to give special recognition to Libba Johnson, who has dedicated 20 years of efforts to the recovery of the loggerhead sea turtle. While Libba is passing on her permit holder responsibilities, she is not hanging up her probe just yet and will continue to assist the Edingsville project as needed.

Libba started out on Botany Bay Plantation and Island in 2002 and worked four seasons there, supervising local students who assisted with the project during their summer breaks. In 2006, Libba took over as permit holder of Edingsville, where she has been for 16 seasons. With a small layer of sand, several inches of oyster shell and finally more sand, Edingsville is a tricky beach on which to identify crawls. Libba is a pro at finding nests in these conditions. Over the 20 years she has been involved with loggerhead nesting, she has surely checked out over 4500 crawls.

Libba, thank you for all you have done to train other turtle volunteers and young folks and protect nests for the last two decades. Remember as you stroll the Edisto beaches five years from now that one of those nesting females could have been a hatchling you protected back in the early 2000s.

Folly Beach Turtle Watch

This year Folly Beach Turtle Watch, in partnership with local law enforcement, were successful in issuing the first court fine for a lighting infraction to a non-compliant beach front house. The city ordinance states that no lights are allowed to illuminate the front beach between 10pm and dawn from May 1 to October 31. Volunteers continued to raise awareness of the dangers of lights on the beach, notably through meeting with beach-front rental companies, educating homeowners and placing educational signs at every nest.

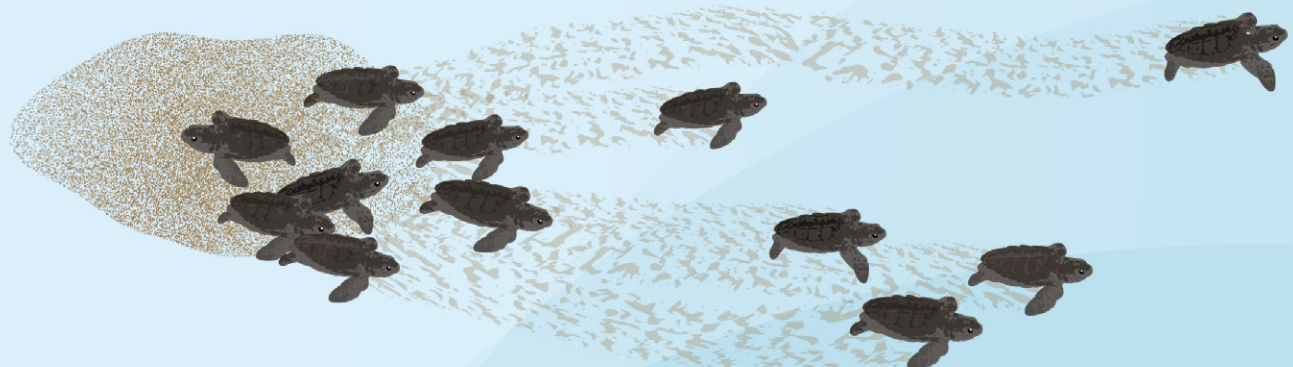
Folly beach is bidding farewell to Teresa Marshall, longtime volunteer with the Marine Turtle Conservation Program. Teresa began with the Folly Beach Turtle Watch as a volunteer, later took on Section Leader duties along with stranding response and finally held the nesting permit as Team Leader for the past four years. Over her many years of involvement, Teresa has solidified great partnerships with the town, working hand in hand with Code Enforcement Officer Eric Lutz, local realty companies and other groups to always do “what’s best for the turtles.” Under her leadership, nests were protected during a renourishment cycle for the Folly Beach and volunteers participated in nighttime surveys for the dredging company. Teresa is always organized, providing the team with weekly updates, prompt in her response to any questions or requests MTCP staff has, and even hand-delivered genetic samples to our office. Her positive, spunky attitude is always a pleasure to encounter, and she is great at rallying the troops when needed. Teresa’s service to the agency is exemplary, and she is well-respected for her steadfast values -- one of which is always keeping the focus on the conservation of sea turtles. We wish her the best on her move to the North Carolina mountains.

Garden City/Surfside

The dedicated volunteer team known as Garden City/Surfside Sea Turtle Guardians was instrumental in passing a beach ordinance that officially bans hole digging in both Surfside Beach and Horry County. The hole ordinance prohibits beachgoers from digging holes larger than two feet deep in the sand and prohibits the use of metal shovels. This will keep both sea turtles and people safe from falling in and getting hurt or worse.

Hunting Island State Park

This year, the Friends of Hunting Island group went international by hosting BBC Global News for a podcast all about the sea turtle conservation program. The podcast highlighted our state reptile, the loggerhead sea turtle, and showcased all the efforts made towards protecting nesting sea turtles in South Carolina.

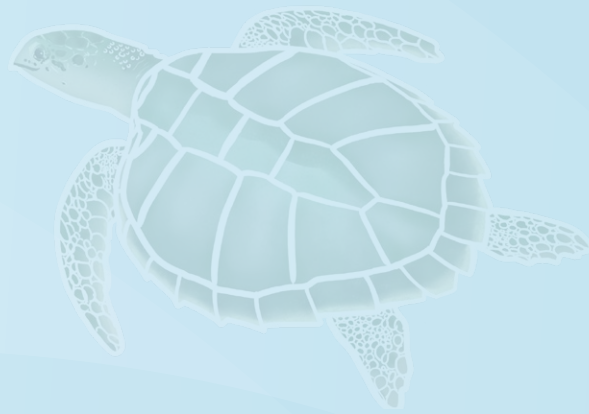


Hilton Head Island

This season, Sea Turtle Patrol Hilton Head Island erected another 'Myrtle' sculpture located at the Hilton Head Island Airport. Myrtle is a loggerhead sea turtle that nests on Hilton Head Island and was originally genetically tagged in 2011. The Sea Turtle Patrol was also successful in having additional turtle-friendly beach regulations passed and implemented in 2021. These included prohibiting metal shovels on the beach as well as digging holes greater than 12 inches deep. On top of this, Sea Turtle Patrol Hilton Head Island added Parris Island and Turtle Island WMA to their survey effort this season -- two Islands not previously surveyed by the network.



Hilton Head Island is bidding farewell to long-time stranding volunteer Sally Krebs this year. After 30 years of dedication to the Marine Turtle Program and 25 years of service to the town of Hilton Head (where she served as the town's natural resources administrator), Sally is taking a well-deserved retirement. We would like to extend a huge thank you to Sally for her contributions to stranding data over the last three decades, and we wish her a happy and relaxing retirement!



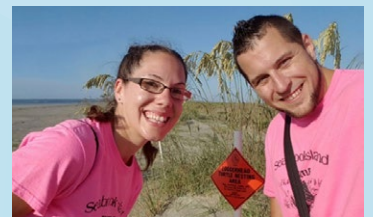
2021 Award Recipients

Nesting Award:
Abby and Robert Morris
Little Capers Island and Pritchards Island

Stranding Award:
Joshua and Amanda Shilko
Seabrook Island

Environmental Stewardship Award:
The Harbor Island Turtle Project led by
Jan Grimsley and Kathy Curry

Outreach and Education Award:
Leah Schwartzentruber
Edisto Beach State Park



Journey to the Sea

Written by Julie Corbisiero, Garden City Surfside Volunteer



On September 22, the last full day of summer 2019, the Garden City Surfside Sea Turtle Guardians Team was anxiously awaiting news of the appearance of some very special hatchlings. We had a “catch bucket” set up on the nest of our beloved Mama Green, a frequent visitor that is near and dear to our hearts. The “catch bucket” was placed as agreed upon with SCDNR and was part of a collaboration with Riverbanks Zoo & Garden. Unbeknownst to one of those hatchlings, they were in for a remarkable “journey.” Pre-dawn... phone rings... “They are here.” Looks to be a perfect morning. We are as giddy as kids on Christmas day. It never ceases to amaze me how a creature that can fit in the palm of your hand can bring so much childlike happiness. The lucky hatchling was selected, given a proper name, settled into her lovingly prepared transport accommodations -- and off she went to become an Education Ambassador at Riverbanks Zoo. After a long, careful road trip to Columbia, our precious cargo arrived at her new home for the next two years. Little did she know that, as the rest of the hatchlings were taking their “leap of faith” into the sea on the clear blue September morning, our Journey was in for quite the experience. She was given a thorough exam upon arrival and quarantined for 30 days. She adapted, thrived and tripled her weight within a few months. After spending a year behind the scenes, Journey was ready to be put on public display at the Aquarium and Reptile Complex at Riverbanks Zoo and Gardens. She was a popular, playful and stunning ambassador for her species during her stay. She was given the opportunity to thrive without threat of predators, disease and other challenges in the wild. Team members followed her progress on the Riverbanks Facebook Page and marveled at how she was transforming into a perfect specimen of *Chelonia mydas*. She even had some in-person visits from her

“aunties and uncles.” It was wonderful to watch her prosper. Fast forward to October 2021: another picture perfect day under a stunning Carolina blue sky. Our Journey is being prepared for her release. She has completed the trip from Columbia, carefully transported by her family from Riverbanks. She is measured and pit-tagged prior to being released by Charlotte and Cami from SCDNR, who has made this all possible. Add to that the attentive aquarists from the Zoo and Milo, who has documented Journey’s journey throughout the past two years. And lastly, most of the Garden City Surfside Beach Turtle Team volunteers that were with her on that special September morning. We gather to witness her become a true sea turtle, and watch as her flippers take her where she belongs. Our caravan arrives at a tranquil marsh area on a balmy, clear day. You can feel the nature and life surrounding you, and you are reassured that this is where Journey will flourish and hone her instincts. She will meet the mighty waves and Mother Ocean with a strong advantage. She politely poses for some last minute photos. I look around and take in the surroundings: the bittersweet and anxious looks on faces, the calming Lowcountry vibes, the stillness of the water, the question of what lies beneath and what the future holds for this beautiful, perfect creature. Now that feeling of childlike happiness that we felt when she emerged from the sand, has transformed to pride and amazement. The time has come to lower her to the water, flippers flying -- she has no hesitation. This is where she belongs... it is her destiny. Just as Journey’s chapter closed with the program, another “student” was welcomed as the Education Ambassador at Riverbanks. Thank you to our turtle family at SCDNR for giving us this blessing again. We are so very grateful. And thank you to Riverbanks Zoo and Garden for the opportunity to share our passion with others. The new ambassador’s name is “Destiny”.



CITIZEN SCIENCE

Report What You See

Members of the public can use the “Survey123 for ArcGIS” app for reporting sightings of healthy sea turtles and manatees in South Carolina waters. Information collected by everyday “citizen scientists” using the app provides valuable data regarding the abundance, locations and life histories of sea turtles. This information may help improve management and decision-making in lesser-studied estuarine and coastal marine waters of South Carolina.

The app allows users to share the location and photos of sightings along with additional information about the animal, such as size, species and observed behavior.

Scan the QR codes below or open the following link in your web browser to download the South Carolina sea turtle and manatee reporting forms to your app: arcg.is/1mKHb00



ACE Basin NERR iNaturalist

Track your observations and check out thousands of other sightings from visitors to the ACE Basin NERR at <https://www.inaturalist.org/projects/ace-basin-nerr>

SCDNR Tips

Report littering, poaching and other violations anonymously to SCDNR law enforcement with the SCDNR Tips app. Found out more at <https://www.dnr.sc.gov/law/OGT.html>

MyCoast App

Report king tides, document storm damage and report abandoned boats to SCDHEC with the Mycoast App. Found out more at <https://mycoast.org/sc>

BEYOND TURTLES

Seabirds & Shorebirds

Contributed by Mary Catherine Martin, SCDNR Biologist

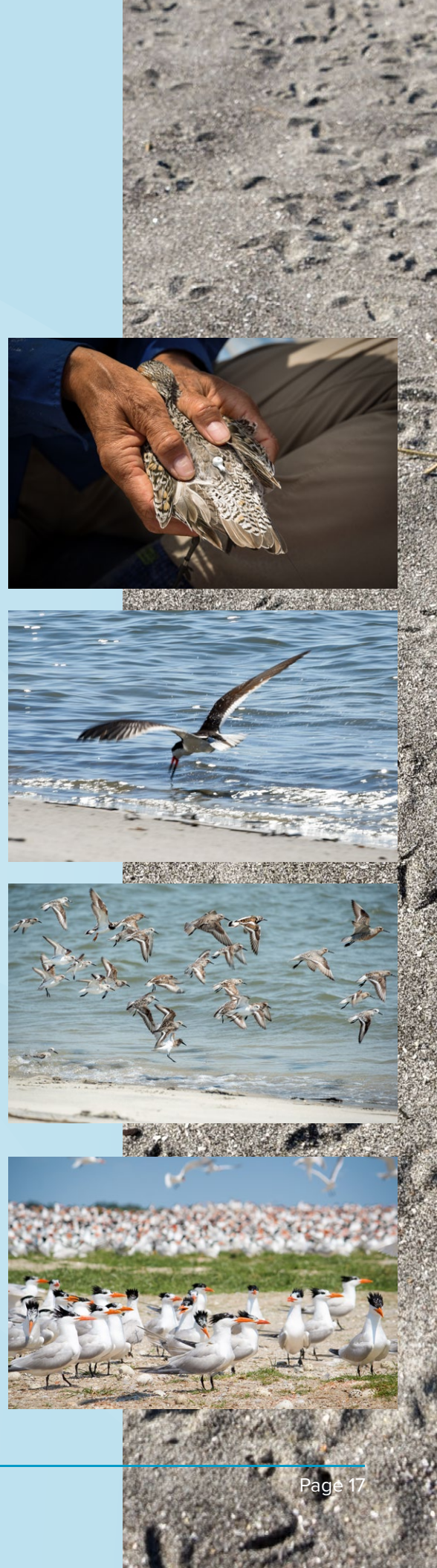
The 2021 season was a momentous year for South Carolina's seabirds and shorebirds! It was the beginning of the Whimbrel Project, which launched with the revelation that Deveaux Bank Seabird Sanctuary in the mouth of the North Edisto River, between Seabrook and Botany Islands, is where at least 20,000 whimbrel gather in their northward migration to Arctic nesting grounds. Twenty thousand is half of the Atlantic Coast population of whimbrel, one of the at-risk species of curlew! Also, the restoration of Crab Bank Seabird Sanctuary was completed in the fall with dredge material from the Charleston Harbor Deepening Project. Spring 2022 at Crab Bank Seabird Sanctuary is hopeful for a booming seabird and shorebird nesting site.

Seabird nesting was a little lower than the South Carolina annual average of 20,000 nests, and part of the decrease was due to the unavailability of two of the Seabird Sanctuary Islands – Tomkins, because of a predation problem, and Crab Bank, because it was intertidal. Both issues have been addressed, so next year seabirds and shorebirds will have more nesting habitat available.

Seabird Nest Count in 2021

5,978	Brown Pelican
7,163	Royal Tern
2,775	Sandwich Tern
965	Least Tern
789	Black Skimmer

Our annual nest census does not include shorebirds such as the American oystercatcher, the Wilson's plover and the Eastern willet. These animals require different nesting habitat than seabirds and often share beaches with nesting sea turtles. Check out allaboutbirds.org/guide/ to learn more about these species.



Horseshoe Crabs

Contributed by Daniel Sasson, SCDNR Biologist

Another species that uses our beaches for nesting is the Atlantic horseshoe crab. During new and full moons in the spring and summer, horseshoe crabs come ashore to spawn. Females lay their eggs in the sand, where they develop for two to four weeks before hatching as 'trilobite' larvae. Horseshoe crabs and their eggs are a critical source of food for many animals, including sea turtles and shorebirds, and their blood is used in the biomedical industry to test the sterility of injectables, including vaccines, and medical devices. In collaboration with partners at the S.C. Aquarium, SCDNR conducts surveys across the state to record the number of horseshoe crabs spawning at each site. SCDNR also tags individuals seen during spawning surveys and those collected in trawl surveys as part of a U.S. Fish and Wildlife led program. The surveys and tagging program are part of a continued effort to monitor the horseshoe crab population in South Carolina.

This past year, for the first time, SCDNR biologists conducted horseshoe crab spawning surveys in salt marsh habitat as part of a project aimed at understanding the use and impact of non-sandy beach habitat for horseshoe crab spawning. They found that horseshoe crabs spawn in salt marsh habitat in similar densities as they do at nearby sandy beaches. Since the South Carolina coastline is dominated by salt marsh, this finding suggests that the potential spawning habitat for horseshoe crabs is much more extensive than previously recognized. Biologists continue to work to understand how the use of salt marsh habitat for spawning affects embryonic development and recruitment into the population.

You can help horseshoe crabs! When surveying the beach in the morning for turtle nests, you may often see horseshoe crabs on their back. This occurs when waves flip them over and they cannot right themselves. Without help, they may desiccate or be eaten by birds and raccoons. If you see a struggling horseshoe crab, give them a nudge with your foot and flip them over. Horseshoe crabs should never be flipped over or picked up by their tail (also called a telson), as that can damage their tail muscles. Righting the horseshoe crabs should allow them to either bury themselves to wait for the next high tide or return themselves to the water.



Marine Mammals

Contributed by Wayne McFee, NOAA Coastal Marine Mammal Assessments Program Lead

Strandings in 2021 were consistent with 2020, with 49 animals from five different species (Figs. 1-2). However, the COVID pandemic may have played a role in carcasses not being reported. Bottlenose dolphin (Tt) strandings were lower than average (mean ~44 since 1992), with 38, but slightly higher than 2020. One of these animals was a photo-id and captured and released cataloged animal, and another a calf of a photo-id, capture-release cataloged animal. Bottlenose dolphin strandings were more frequent in March with November again being low, contrary to past published data, and appearing to be a new trend pushing more strandings into December (Figs. 3-5). Perinate mortality of bottlenose dolphins (21.1% of total) was below the historical average (Fig. 6).

Other species to strand were: four pygmy sperm whales, one unknown Kogia spp., two Atlantic spotted dolphins, three Cuvier's beaked whales and one Blainville's beaked whale. Ten animals stranded alive (two bottlenose dolphins, three pygmy sperm whales, one Kogia spp, two Cuvier's beaked whales, and two Atlantic spotted dolphins).



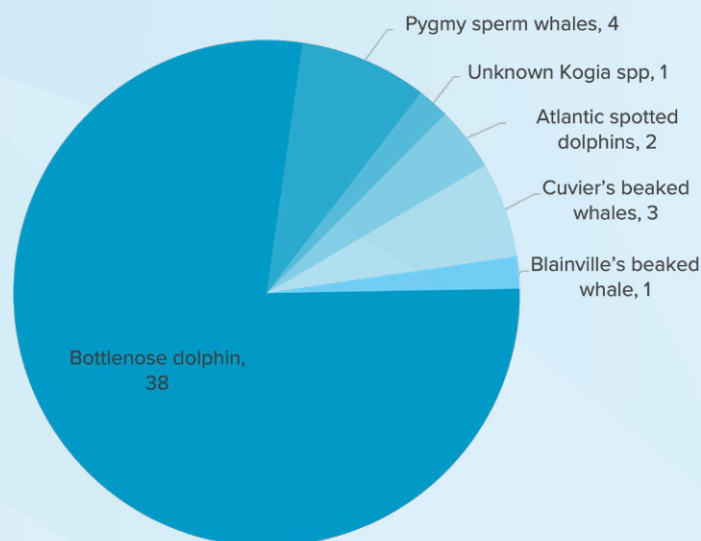
Atlantic spotted dolphin (*Stenella frontalis*)

There were three cases of bottlenose dolphin/human interactions during the period. Percentage of human interactions for the period was 23.1%, on par with the historical average. These percentages are based on animals that were confirmed HI cases and those that died of natural causes and excluded animals where the suspected cause of death was not determined (CBD). One case involved a crab pot line

entanglement, one showed obvious signs of rope wounds, and one stranded alive and was pushed back to sea by the public. The dolphin entangled in the crab pot buoy line was found dead. Five other HI cases from other species were all due to animals being pushed back to sea. This is a continuing trend, and more public education on the reasons for not pushing stranded animals back to sea is needed.

Overall, NOS personnel, CCU personnel, SCDNR, and LMMN personnel responded to 84 calls during 2021 of marine mammal strandings and other marine mammal issues. SCMMSN, LMMN, State and Federal agencies responded to 71.4% of the strandings in SC, higher than 2020 but lower than the 15-year historical average of 84%. NOAA, LMMN and the SCMMSN would like to thank SCDNR and all the sea turtle staff and NOS volunteers who assisted during 2021.

SC Marine Mammal Strandings in 2021 by Species



OUR TEAM

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As well as:

Roger and Mindy Shanfeld

MCF Sitework and Utilities, Inc.

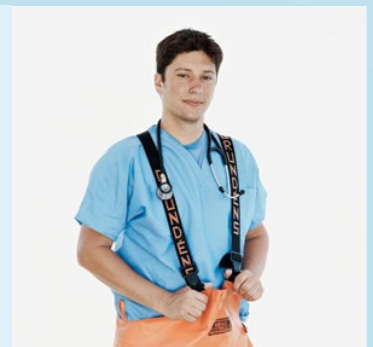
Susan O. Frenkiel in honor of Michelle and Steven Beck

Daniel and Dorothy Veazey



Farewell to Dr. Shane Boylan

This past year, we along with the Charleston community, said goodbye to longtime South Carolina Aquarium Senior Veterinarian, Dr. Shane Boylan. We wish him the best in his next chapter at the Sea World Abu Dhabi Aquarium and Rehabilitation Center in United Arab Emirates.



IN MEMORIAM

Spence Crow

Huntington Beach State Park

1935 - 2021

David Jaquith

Edisto Town Beach

1943 - 2021

Kathy Raley

North Litchfield Project under SCUTE

1949 - 2021

Thomas Williamson

Myrtle Beach State Park

1939 - 2021

Phil Maier

Deputy Director of Marine Resources, SCDNR

1964 - 2021



Phil was born on July 2, 1964 to Hebert and Belle Maier and entered into Heaven on December 7, 2021. Phil is predeceased by his parents, Hebert and Belle Maier, and brother, Christopher Maier. Phil grew up near the mouth of the Manasquan River in New Jersey, where he took an interest in fishing and boating from a young age. As a teenager, Phil worked on fishing vessels; "rare was the day" he didn't spend on the water, he said. It was during those years that he became an avid reader of an outdoors magazine published far from New Jersey—South Carolina Wildlife. He would go on to spend his life studying, protecting and appreciating the wildlife and landscapes featured in those magazine pages.

In 1986, Phil moved to Charleston, South Carolina to begin studies at the College of Charleston. He came to SCDNR by way of his graduate studies on shrimp, joining the agency as a graduate assistant. Over the intervening decades, he worked in each of the key sections of the Marine Division: research, outreach and fisheries management. In 2020, Phil became the sixth director of the state's Marine Division, officially taking over just weeks before the COVID-19 pandemic shut down the country. Under his leadership, the Marine family safely weathered an unprecedented global crisis, the Fort Johnson Marine Center footprint grew with the addition of neighboring protected lands, and landmark legislation ensured more funding for the important conservation work he oversaw.

To strangers, Phil was a man of imposing stature, understated language and stoic expression. But family, friends and colleagues knew him as warm-hearted and passionate outdoorsman with an unexpectedly playful sense of humor. His strong sense of duty and humility guided his work behind the scenes as a public servant who was deeply committed to access and enjoyment of the outdoors he himself so valued.

Phil had a particular love and generosity for mentoring younger staff with an interest in hunting and fishing; he took colleagues on their first hunt, shared game from his own freezer and constantly encouraged his staff to connect with South Carolina's rich natural resources. He never missed an opportunity to talk turkey season or exchange recipes with the friends he quietly made across the community.

But Phil's legacy resides perhaps most impactfully in the colleagues he mentored over a celebrated career, in the calm resolve he cultivated in all he worked with, and in the beloved family he leaves behind. Phil is survived by his loving wife, Beth, and children Katie and Noah; in-laws Mr. & Mrs. Bobby Cowart of Mount Pleasant; and Robbie, Lori, Carson and Jackson Cowart, all of Charleston. Phil is also survived by two brothers: Steve Maier & wife Joanne of Williamsburg, Virginia and Paul Maier & wife Linda of Flint, Texas.

The SCDNR Marine Turtle Conservation Program



Monitoring



Research



Management



Education

5 Ways to Support Our Mission

1. Donate directly to the Marine Turtle Protection Program Tax deductible donations may be sent to:

SCDNR Sea Turtle Program
PO Box 12559
Charleston, SC 29412

2. Donate to the SCDNR Endangered Wildlife Fund at tax time with this form:
bit.ly/endangeredtaxdonation

3. Donate to the Marine Resources Fund via Shop SCDNR: bit.ly/marinefund

4. Purchase the Endangered Species license plate from the SCDMV in person or online today:

bit.ly/endangeredspeciesplate

5. Make a contribution to the Harry Hampton Wildlife Fund:

bit.ly/hamptonfund

*Specify that your gift is for the **Marine Turtle Conservation Program**.*

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